

REMARKS

Claims 21-35 are pending in the application.

Applicants have amended claim 27 so that the claimed method no longer recites reducing a decrease in resistivity of a cable only at elevated temperatures. Also, Applicants have amended claim 31 to recite a method of reducing moisture infiltration to a cable instead of a method of preventing moisture infiltration to a cable. As disclosed in the application and as further explained and shown in the Declaration of Kevin Guangjun Cai, Ph.D., Under 37 C.F.R. 1.132 ("Cai Declaration") submitted herewith, the present invention provides a cable and a method of manufacturing a cable whereby the cable experiences higher insulation resistance ("IR") and, therefore, a reduced moisture infiltration and a reduced decrease in resistivity of the cable over time in comparison to cables which contain a filler of only magnesium oxide ("MgO") (see page 3, lines 2-4 of the specification). Since the specification discloses a method of reducing moisture infiltration to a cable and reducing a decrease of resistivity of a cable, no new matter has been added by this amendment. Accordingly, entry of the amendment is respectfully requested.

The Examiner has rejected claims 21, 25-27, 31 and 35 under 35 U.S.C. §103(a) as being unpatentable (obvious) over U.S. Patent No. 6,466,123 of Kuzuoka et al ("Kuzuoka") in view of the *Condensed Chemical Dictionary*, 10th Ed., Revised Hawley ("Hawley"). The Examiner contends that Kuzuoka discloses a cable comprising an outer metallic sheath, at least one metallic conductor therein, and powered filler disposed between the outer sheath [and] the

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conductor, wherein the filler comprises a mineral insulation consisting essentially of magnesium oxide (MgO). The Examiner acknowledges that Kuzuoka does not disclose mineral insulation consisting essentially MgO and kaolin. However, the Examiner argues that, since Hawley discloses that kaolin is a known filler which is used as electrical insulators and is absorbent for clarification of liquids, that it would have been obvious to one of ordinary skill in the art to include kaolin in the mineral insulation of Kuzuoka.

With regard to claims 25, 27 and 31, the Examiner further contends that Kuzuoka discloses the outer sheath being drawn down. Also, with regard to claim 26, the Examiner argues that it would have been obvious to one skilled in the art to mix MgO and kaolin before filling the mixture into the outer sheath of Kuzuoka to evenly provide kaolin in the space between the conductor and the sheath, since mixing the components of the mixture before using the mixture is known in the art. Further, with regard to claim 35, the Examiner notes that the kaolin powder filling the cavities in the magnesium oxide is disclosed in the modified cable of Kuzuoka.

Additionally, the Examiner rejects claims 22-24, 28-30 and 32-34 under 35 U.S.C. §103(a) as being obvious over Kuzuoka in view of Hawley as applied to claims 21, 27 and 31 above, and further in view of U.S. Patent No. 6,077,472 of Kataoka, et al. ("Kataoka"). The Examiner contends that Kataoka discloses a heat insulating material comprising kaolin in an amount of 5% to 50% by dry weight and that it would have been obvious to one skilled in the art to use the kaolin amount taught by Kataoka in the insulation of Kuzuoka to form a heat insulating material.

In response to Applicants' arguments in support of claims 21, 25, 27 and 31, as presented in the Amendment Accompanying RCE Request filed December 4, 2002, the Examiner states that the arguments are moot in view of the new grounds of rejection. However, the Examiner asserts that Kataoka was used only to support the position of using a particular amount of kaolin in an insulating material to provide the material with heat resistance. Therefore, the Examiner argues, Kataoka does not have to disclose kaolin being added in a mineral insulation.

Applicants respectfully traverse these rejections and the arguments in support thereof, and request reconsideration and withdrawal of the rejections.

Contrary to the Examiner's assertion, Kuzuoka is not so broadly directed to a cable, including a metal sheathed mineral insulated ("MI") cable, as in the present application. Instead, Kuzuoka only discloses an improved temperature sensor having a sensing element containing a thermistor and a method of manufacturing the temperature sensor (see, e.g., col. 1, lines 8-10). In particular, Kuzuoka teaches a method of manufacturing a temperature sensor which does not displace the thermistor, so that the temperature detecting characteristics of the sensor remain unchanged, thereby allowing highly accurate temperature detection to be performed (col. 1, lines 12-22).

Also, as the Examiner acknowledges, Kuzuoka does not disclose a mineral insulation consisting essentially of MgO and kaolin. While Applicants acknowledge that Hawley discloses that kaolin is a filler and an adsorbent for clarification of liquids and electrical insulators, Applicants argue, most strenuously, that kaolin has not been used successfully as an

additive to a mineral insulation filler of an MI cable as claimed in the present invention (see page 2, lines 3-17 of the specification). Instead, kaolin has previously been used successfully as a component in ceramics, which Applicants understand to be the meaning of the disclosure of Hawley. In other words, while Applicants acknowledge that ceramics, which can contain kaolin, are used as electrical insulators, the use of kaolin as a ceramic component is different from the use of kaolin as an additive to a mineral insulation filler of an MI cable as claimed in the present application.

Ceramics are typically made by a process of mixing different compounds and/or minerals with water and then forming a hard, solid product. In contrast, in the present invention, kaolin is mixed with MgO to form a powdered mineral insulation which is disposed between an outer sheath and a metallic conductor of a cable (see, e.g., claims 21 and 25). Thus, Applicants argue, most strenuously, that the use of kaolin as described in Hawley is different from its use in the present invention and, as a result, it would not have been obvious to one skilled in the art at the time of the present invention to include kaolin in the mineral insulation of Kuzuoka. Instead, the mixture of kaolin and MgO as a powdered mineral insulation filler for use in the claimed cable is unobvious over Kuzuoka in view of Hawley, as it was only through extensive investigation and inventive activity that Applicants discovered the claimed cable construction and method of manufacturing such that the cable is capable of reducing moisture infiltration and a decrease in the resistivity (see claims 21, 25, 27 and 31).

Notwithstanding, even if *prima facie* obviousness could be shown based on the above-noted combination of references, such *prima facie* obviousness is sufficiently overcome

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by Applicants' improved and unexpected results as evidenced by the enclosed Cai Declaration. Dr. Cai is an inventor of the present invention and is familiar with the Examiner's rejections in Paper No. 18 (see Cai Declaration at ¶ 5). As stated in the Cai Declaration, the results of Experiments 1 through 4, demonstrate that cables filled with a powdered mineral insulation filler comprising MgO and about 3% to about 20% kaolin result in a higher IR (insulation resistance) than cables which contain a filler of only MgO (see Cai Declaration at ¶18 and Figures 1-6). As a result, cables made by the claimed method of manufacturing reduce moisture infiltration to the cable and reduce a decrease in resistivity of the cable (see claims 21, 25, 27, 31 and Cai Declaration at ¶19).

In view of the above Remarks and enclosed Cai Declaration, it is submitted that pending claims 21-35 are patentably distinct from the prior art of record and in a condition of allowance. A Notice of Allowance is respectfully requested.

Respectfully submitted,

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